AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-4. (canceled).

5. (previously presented): A method of communicating via satellite in a system comprising a satellite having a first type antenna capable of transmission of communication signals to a region on the earth's surface and a plurality of earth stations disposed in said region, each earth station having a second type antenna capable of reception of said signals, said method comprising;

transmitting from said first type antenna multiple sub-beams within bandwidth allocated to a basic spot beam to said plurality of antennas in said region,

wherein the number of said sub-beams N are defined by the mathematical equation $N=i^2+j^2+ij$, where i and j are non-negative integers.

6.-7. (canceled).

8. (previously presented): A method of communicating via satellite in a system comprising a satellite having a first type antenna capable of transmission of communication signals to a region on the earth's surface and a plurality of earth stations disposed in said region, each earth station having a second type antenna capable of reception of said signals, said method comprising;

transmitting from said first type antenna multiple sub-beams within bandwidth allocated to a basic spot beam to said plurality of antennas in said region,

wherein said sub-beams require less peak gain than said basic spot beam, and

where each sub-beam is defined by a contour level, said contour level determined by a required edge gain.

9. (original): A method as claimed in 8, wherein the gain relationship between said basic spot beams and said sub-beams can be defined by the equation $G_b - x_b = G_s - x_s$ where G_b and G_s refer to said peak gain values of said basic spot beams and said sub-beams respectively, and x_b and x_s denote the contour levels for which each beam is defined.

10. (original): A method as claimed in 9, wherein the peak gain of said antenna can be related to its half power beam width (hpbw), θ_3 by an the equation $G = 10\log(\frac{A}{\theta_3^2})$, where A is a constant partly defined by antenna efficiency.

11. (original): A method as claimed in 10, wherein the beamwidth of a phased array at an arbitrary contour level to its hpbw is determined by the equation $\theta_X = \theta_3 * 0.59 * x^{0.4806}$, where the units of the beamwidth are in degrees.

12. (original): A method as claimed in 9, wherein the contour levels of said basic and said sub-beams can be related to their beamwidths by the equation $9.612\log\left(\frac{x_s}{x_b}\right) + x_b - x_s = 20\log\left(\frac{\theta_s}{\theta_b}\right)$, where θ_b is basic beamwidth and θ_s is sub-beam beamwidth.

13-20. (canceled).